

2. Remarks.

- a. Claim Objections. Claim 29 is amended to provide antecedent basis for the phrase "ink supply reservoir" in claims 30 and 32.
- b. Claim Rejections. Independent claims 1, 6, 26 and 29 are rejected as anticipated by Okamoto et al. Claims 1, 6 and 26 are rejected as anticipated by Ogawa et al.. And claims 1, 6, 16 and 26 are rejected as anticipated by Lorenze, Jr. et al. Claims depending from the independent claims just noted are similarly rejected.

Applicant respectfully traverses the rejection of these independent claims in light of the amendments made herein and the comments below.

A fundamental difference between each of the patents cited by the Examiner and the invention claimed herein lies in the fact that in the claimed invention, by changing the pressure in the ink chamber, ink may be expelled from the pen through the printhead, and ink may be drawn into the pen through the printhead. Thus, ink passes both out of and into the pen *through the printhead*. This allows the pen to be selectively purged and filled at a single station with a single pump, and the ink supply reservoirs act as both an ink supply source, and a purge-ink receptacle.

In Okamoto et al., when it is necessary to refill ink into storage tank 20, the pump system operates to create a negative pressure within the tank. Prior to connecting an ink supply means 21 to an intake port 20b located atop the storage tank 20, air and thickened ink are discharged into a waste container 33. Then, with the ink tank still under negative pressure, the ink supply means 21 is connected to intake port 20b causing ink to flow into the tank from a refilling ink tank 22. (See, e.g., Figs. 5, 6, and section [0121]. Ink does not flow into the tank 20 through the printhead (i.e., recording head 20).

With respect to Ogawa et al., as noted by the Examiner, two separate pumps are used, one (pump 11) for supplying ink from a supply tank 10 to printhead 1, and the other (pump 22) to withdraw ink from the printhead through the orifices 3. Although ink is drawn through orifices 3 during the purging operation, ink is supplied to printhead 1 through a conduit 12, an inlet port (i.e., "inport 35"), and ultimately into an ink pool chamber 32. Ink does not flow into the printhead through the nozzles during the ink filling operation.

Finally, the ink jet refilling apparatus disclosed in the Lorenze, Jr. et al. patent is an off-machine system that requires removal of the cartridge 12 from the printer for manual filling at another location. The cartridge is refilled by attaching the cartridge to a refill assembly that contains a supply of ink. The opposite end of the cartridge is connected to a vacuum syringe 60, which when actuated draws ink from the supply container 46, through the nozzles 26 in the printhead. With this apparatus, the vacuum syringe 60 is used only to draw ink into the cartridge 12 to refill it. After that the cartridge is reinstalled into the printer, where ink is expelled through the nozzles (e.g., during printing) with a different mechanism.

Comments on specific claim amendments follow.

Claim 1. As amended, the pump is operable to draw in into the chamber through the printhead and expel ink from the chamber through the printhead. Okamoto et al. do not describe any system or structure that allows ink to be drawn into the pen through the printhead. Similarly, the device described in Ogawa et al. fills ink through an ink inport, not through the printhead. Moreover, as noted by the Examiner, Ogawa et al. requires two pumps. As amended, the pump in the invention claimed herein draws ink into the chamber and expels ink from the pen.

Applicant respectfully traverses the rejection of claim 1 over Lorenze, Jr. et al. because the pump shown therein can selectively draw ink into the pen, but there is no disclosure of the pump being operated in reverse to expel ink from the pen. Regardless, however, claim 1 as amended is not anticipated by Lorenze, Jr. et al. for the reasons described above with respect to Okamoto et al. and Ogawa et al.

Claim 6. This claim is amended to clarify that the amount of ink in the chamber is modified by drawing ink into the chamber through the printhead, and by expelling ink from the chamber through the printhead. As discussed above in respect of claim 1, none of the cited references disclose such a method (or a structure for accomplishing it).

Claim 26. The pump in claim 26 modifies the pressure in the reservoir to expel ink through the printhead and to cause ink to enter the reservoir through the printhead.

Claim 29: Applicant traverses rejection of claim 29 over Okamoto et al., as that patent does not disclose an ink supply reservoir having a cap defining a seat


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configured to receive the printhead and to form a seal therebetween. Instead, in Okamoto et al. the seal between the ink supply and the pen is at the intake port 20b, not the printhead. Moreover, as with the claims discussed above, none of the cited references describe intake and output of ink through the printhead, as required by claim 29.

For the reasons discussed above, the independent claims are distinguishable from the prior art cited by the Examiner and are allowable over the art. The dependent claims are allowable based on dependency from allowable base claims and for the limitations they add to the base claims. Allowance of the application is respectfully requested.

Respectfully submitted,

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Douglas D. Hancock
Registration No. 35,889

ipsolon llp
805 S.W. Broadway, #2740
Portland, Oregon 97205
phone: (503) 419-0703